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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,770	11/19/2003	Michael A. Guillorn	UBAT1530	6209
38396	7590	06/09/2005	EXAMINER	
JOHN BRUCKNER, P.C. 5708 BACK BAY LANE AUSTIN, TX 78739			FERNANDEZ, KALIMAH	
			ART UNIT	PAPER NUMBER
			2881	

DATE MAILED: 06/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/716,770	GUILLORN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Kalimah Fernandez	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 18 May 2005.

2a) This action is FINAL.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 24-46 and 71-95 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 24-46 and 71-95 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 19 November 2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.

5) Notice of Informal Patent Application (PTO-152)

6) Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. Claims 1-23 and 47-70 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 5-18-05.
2. The traversal is on the ground(s) that the examination of all claims would not be a burden on the Office. This is not found persuasive because applicant has not produced sufficient rebutting evidence to overcome the *prima facie* showing that a serious burden exists.
3. While claim grouping<sup>5</sup> I and II are related, group I is a process of making invention---a statutorily defined category and group II is a product-made invention. Groups I and II occupy two different statutory categories. The restriction is insisted upon, because it has been shown that a materially different process can make the product-made. (See MPEP 806.05(f)).
4. In addition, the *prima facie* burden imposed by searching the distinct inventions is substantiated, because the method/process claims of group I require numerous features like "growing the vertically aligned nanostructure

at the deterministic site with the catalyst nanoparticle; depositing a first protective layer that surrounds at least a portion of the vertically aligned nanostructure," which are neither required or necessary to produce the cantilever in group II. Because groups I and II occupy different statutory categories, have different statuses in the art, and require materially different searches, applicant must substantiate his allegation with persuasive rebutting evidence to overcome the *prima facie* burden.

5. Due to the lack of persuasive evidence to the contrary, the requirement is still deemed proper and is therefore made FINAL.

***Claim Objections/Warning***

6. Applicant is advised that should claim 24 be found allowable, claim 85 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

***Specification***

7. The attempt to incorporate subject matter into this application by reference to US Pat No. 6,649,431 is ineffective because the claim limitation “an expanded base” is essential to support claims 32 and 79. Applicant is required to amend the specification to include the material incorporated by reference and to clearly link the material to the recited structure in claims 32 and 79.
8. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the recitation “deactivated layer that substantially surrounds a portion of the vertically aligned nanostructure” lacks supporting disclosure to enable a reasonable artisan to make and use the invention.

***Information Disclosure Statement***

9. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by

the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper."

Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

### *Drawings*

10. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because drawing details are blurry and out-of-focus such that one can discern what is depicted in the drawings. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 112*

11. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

12. Claims 33-34 and 80-81 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a protective  $\text{Si}_3\text{N}_4$ , does not reasonably provide enablement for a deactivating layer. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use a deactivating layer the invention commensurate in scope with these claims.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 24,26-28,30-31,71,74-75,77-78, and 84-85 are rejected under 35 U.S.C. 102(b) as being anticipated by US Pat No. 6,743,408 issued to Lieber et al.

3. As per claims 24, 71 and 85, Lieber et al disclose a cantilever structure (see col.5, lines 6-14).

4. Lieber et al disclose a silicon substrate including a cantilever body that includes a doped layer (col.5, lines 15-46).
5. Lieber et al disclose a vertically aligned nanostructure coupled to the cantilever body (see fig. 1a-c).
6. As per claim 26, Lieber et al disclose a single vertically aligned nanostructure (see fig. 1a).
7. As per claims 27 and 74, Lieber et al disclose the vertical aligned nanostructure is coupled to the cantilever body at a photolithographically defined location (see col.6, line 54-col.7, lines 14).
8. As per claims 28 and 75, Lieber et al disclose the vertically aligned nanostructure is located toward an end of the cantilever body and substantially on a longitudinal centerline of the cantilever body (see fig. 1a).
9. As per claims 30-31 and 77-78, Lieber et al disclose both a single wall and multi-wall carbon nanotube (see col.5, lines 28-31).
10. As per claim 84, Lieber et al disclose an etch stop (see col.6, line 66-col.14). Here, Lieber et al terms the etch stop as a sacrificial layer.
11. Claims 24-26, 28, 30-31, 35, 39-46, 71-73, 75, 77-78, 82-83, 85, 88-89 and 90-95 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pub No 2002/0084410 issued to Colbert et al.

12. As per claims 24, 71 and 85, Colbert et al disclose a cantilever structure (see para. 0084-0086).
13. Colbert et al disclose a substrate including a cantilever body that includes a doped layer (see para. 0099).
14. Colbert et al disclose a vertically aligned nanostructure coupled to the cantilever body (see para. 0099).
15. As per claims 25 and 72, Colbert et al disclose another vertically aligned nanostructure coupled to the cantilever body (see figs. 1b-c).
16. As per claims 26 and 73, Colbert et al disclose a single vertically aligned nanostructure (102) (see fig. 1a).
17. As per claims 28 and 75, Colbert et al disclose the vertically aligned nanostructure is located toward an end of the cantilever body and substantially on a longitudinal centerline of the cantilever body (see fig. 1a).
18. As per claims 30-31 and 77-78, Colbert et al disclose both a single wall and multi-wall carbon nanotube (see para. 0040).
19. As per claims 35 and 82-83, Colbert et al disclose an electrically conducting layer coupled between the vertically aligned nanostructure and the doped layer of the cantilever body (see para. 0066).

20. As per claims 39 and 88, Colbert et al disclose the nanostructure is hydrophilic (see for example para.0074).
21. As per claims 40 and 89, Colbert et al disclose a tip region of the vertically aligned nanostructure is chemically modified (see para. 0086-0087).
22. As per claims 41-46 and 90-95, Colbert et al disclose a chemical force microscope tip embodiment (see for example para. 0063-0065; 0070).

***Claim Rejections - 35 USC § 103***

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. Claims 29, 32,76, and 79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Colbert et al and in view of US Pub. No 2002/0117951 issued to Merkulov et al.
25. Colbert et al disclose the claimed invention except for a carbon nanofiber and an expanded base w/ a cylindrical nanostructure.

26. However, Merkulov et al teach the desirability of carbon nanofibers (see para. 0006) and an expanded base w/ a cylindrical nanostructure as recited (para 0021).

27. It would have been obvious to an ordinary artisan at the time of the invention to combine Colbert et al and Merkulov et al since Merkulov et al teach improved mechanical and thermal stability (see for example para. 0021). Merkulov et al also suggest using his invention as probe tips in para.0048.

28. Claims 38 and 87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Colbert et al as applied to claims 24 and 71 above, and further in view of US Pat No 6,159,742 issued to Lieber et al.

29. Colbert et al teach the claimed invention, except for degeneratively doping and hydrophobic.

30. However, Lieber et al '742 teach the desirability of hydrophobic (see col.7, lines 44-57).

31. It would have been obvious to an ordinary artisan at the time of the invention to combine Colbert et al and Lieber et al '742, because Lieber et al '742 teach improved bonding (see col.7, lines 44-57).

32. Claims 37 and 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lieber et al '408 as applied to claims 24 and 71 above, and further in view of US Pub No 2001/0051367 issued to Kiang.

33. Lieber et al '408 teach the claimed invention except for a degeneratively doped layer.

34. However, Kiang teaches the use of a degeneratively doped layer (see para. 0012).

35. It would have been obvious to an ordinary artisan at the time of the invention to combine Lieber et al '408 and Kiang, because Kiang teach improved magnetoresistance properties (see para. 0012).

### ***Conclusion***

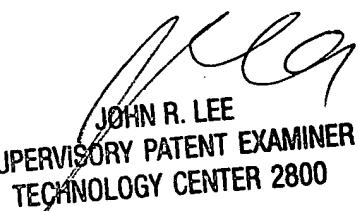
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kalimah Fernandez whose telephone number is 571-272-2470. The examiner can normally be reached on Mon-Tues 6:30-3:30; Wed-Thurs 8-5 and Fri.9am-6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on 571-272-2477. The

fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KF



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